PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty) .

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference JIM/PL/2051023/at	FOR FURTHER ACTION	See Form PCT/IPEA/416

International application No. **PCT/SG2004/000097**	International filing date *(day/month/year)* 16 April 2004	Priority date *(day/month/year)* 2 July 2003

International Patent Classification (IPC) or national classification and IPC

Int. Cl.[7]   G06F 17/60

Applicant

   YAP, Chin Kok

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

   a. ☐ *(sent to the applicant and to the International Bureau)* a total of   sheets, as follows:

      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s))   , containing a sequence listing and/or table related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

   ☒ Box No. I   Basis of the report

   ☐ Box No. II   Priority

   ☐ Box No. III   Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

   ☐ Box No. IV   Lack of unity of invention

   ☒ Box No. V   Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

   ☐ Box No. VI   Certain documents cited

   ☐ Box No. VII   Certain defects in the international application

   ☐ Box No. VIII   Certain observations on the international application

Date of submission of the demand 29 April 2005	Date of completion of the report 5 August 2005
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer **J.W. THOMSON** Telephone No. (02) 6283 2214

Form PCT/IPEA/409 (Cover sheet) (January 2004)

Box No. I	Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

    ☐ This report is based on translations from the original language into the following language   , which is the language of a translation furnished for the purposes of: ·

        ☐ international search (under Rules 12.3 and 23.1 (b))

        ☐ publication of the international application (under Rule 12.4)

        ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

    ☐ the international application as originally filed/furnished

    ☒ the description:

            pages **1, 3-9** as originally filed/furnished

            pages* **2a-2e** received by this Authority on **1 August 2005** with the letter of 1 August 2005

            pages*   received by this Authority on   with the letter of

    ☒ the claims:

            pages   as originally filed/furnished

            pages*   as amended (together with any statement) under Article 19

            pages* **10-14** received by this Authority on **1 August 2005** with the letter of 1 August 2005

            pages*   received by this Authority on   with the letter of

    ☒ the drawings:

            pages **1-2** as originally filed/furnished

            pages*   received by this Authority on   with the letter of

            pages*   received by this Authority on   with the letter of

    ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☒ The amendments have resulted in the cancellation of:

        ☐ the description, pages

        ☒ the claims, Nos. 30-63

        ☐ the drawings, sheets/figs

        ☐ the sequence listing (*specify*):

        ☐ any table(s) related to the sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

        ☐ the description, pages

        ☐ the claims, Nos.

        ☐ the drawings, sheets/figs

        ☐ the sequence listing (*specify*):

        ☐ any table(s) related to the sequence listing (*specify*):

*   *If item 4 applies, some or all of those sheets may be marked "superseded."*

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	:	Claims	**1-29**	**YES**
		Claims		**NO**
Inventive step (IS)		Claims	**1-29**	**YES**
		Claims		**NO**
Industrial applicability (IA)		Claims	**1-29**	**YES**
		Claims		**NO**

2. Citations and explanations (Rule 70.7)

The following documents as identified in the International Search Report (ISR) are relevant:

- US 5946662 (Ettl), 31 August 1999 [Ettl]
- EP 0733986 A (Panduit Corporation), 25 September 1996 [Panduit]

The invention defined in claims 1-29 are novel and inventive over the prior art documents listed above. Neither Ettl nor Panduit disclose an inventory management system including use of a transport server containing data enabling transportation costs of the supply or delivery of stock to be determined so that the total supply and transportation costs of the stock can be determined.

- 2 -

and ready for freight and transportation approval, cost estimate etc.

SUMMARY OF THE INVENTION

5   It is the object of the present invention for a method of calculating and comparing the levels of inventory to a stored set of parameters, triggering shipment and/or call for shipment/orders, automatic ordering of specific inventory and calculation of freight, shipment documentation processing and transportation costs based on the said order being triggered.

10

The invention provides an inventory management system comprising:

an inventory server having a database of inventory products for classifying inventory levels based on predetermined rules comprising at least a critical stock level and a rolling forecast of required stock over a predetermined time period, to

15   enable a product amount data signal to be generated, and output signals generated based on the predetermined rules, the server enabling a supplier or customer to view the output signals over a communication link to facilitate supply or ordering of stock, and to trigger actuation of a request for resupply of stock or stoppage instructions to stop resupply of stock in response to the product position

20   data signal;

a transport server for containing data relating to the transportation of stock to enable transportation costs of stock to be supplied by a potential supplier and/or ordered by a potential customer to be determined so that the total supply and transportation cost of stock can be determined; and

25   a supply module for activation by the server in response to the trigger activation from the server to call for supply of stock from suppliers or fulfil orders submitted by customers and to generate supply documentation for the supply of stock from suppliers or fulfilment of orders from customers.

30   The system of the invention therefore enables an inventory of stock to be maintained and for stock to be replenished so that stock is available for supply to customers. The system also enables customers and suppliers to view the inventory status and for transportation costs to be supplied for adding to the inventory cost to determine the total cost of supply and fulfilment of ordering of

35   stock.

In one embodiment the predetermined rules further comprise a minimum stock

- 2a -

level, a current stock committed by single supplier, a multiple supplier commitment
level, and wherein the critical stock level is the difference between the current
stock committed by a single supplier and the multiple supplier commitment level,
and wherein the multiple supplier commitment level is the sum of all the current
5   stock committed by single suppliers.

In one embodiment the inventory server provides the output signals in the form of
an XML formatted document that is stored on the server.

10   Preferably the communication link comprises the internet.

Preferably the communication link is a secured encrypted communications link.

The inventory server and the transport server may be a single server or may be
15   separate individual servers. The supply module may also be part of a single
server or of a multiple server system.

In one embodiment of the invention the product amount data signal is generated
by the subtraction of the forecast and critical stock level data to provide both
20   status buffer data and the stock position data.

Preferably one of the outputs supplied by the inventory server comprises an
inventory status and ageing data.

25   In another embodiment one of the outputs comprises a consumption status report
comprised of transportation data and inventory forecast data to yield a final
consumption status report.

In one embodiment of the invention the status buffer data and the critical stock
30   level data are compared to the forecast to produce the product amount signal in
the form of an order quantity to trigger activation of the request for resupply of
stock.

In one embodiment of the invention the inventory server has a master remote
35   server, a main server memory and at least one data storage device, and wherein
the master remote server loads data representing the level of forecast inventory
required according to stored parameters in the permanent data storage device and

- 2b -

determines the level of forecast inventory required according to data provided by the master remote server or separate processing systems.

5   Preferably the master remote server compares the level of forecast inventory with the minimum level of inventory required, critical stock level and current stock committed by single supplier data to determine the nature of the trigger activation so that a determination is made as to whether there is excessive stock levels or shortage due to insufficient buffer stock so that triggering actions can be transmitted by the supply module to either a third party processing system or

10   another system connected to the master server for further electronic processing, including reordering and inventory stoppage instructions.

In another embodiment of the invention the product amount data signal is produced by combining the buffer stock data and minimum stock level data to

15   determine whether the level of forecast inventory required data is adequate and, if not, the server supplies a trigger activation to order additional stock from a predetermined group of suppliers.

In a further embodiment of the invention, the inventory server in response to the

20   trigger activation creates an order message for supply to the order module which causes the order module to match each order message to each order or part specification number from a specification database and consolidates part numbers and identifying data into a look up file.

25   Preferably the look up file is used by the transport server to determine transportation costs from a database relating to the transportation of stock, and a calculation processor for calculating estimated shipping costs to bring all stocks to be reordered to a particular location.

30   Preferably the ordering module includes a sub-module for updating the look up file to trigger shipment booking and/or stock ordering together with transportation documentation.

The invention provides an inventory management method comprising:

35   maintaining a database of inventory products for classifying inventory levels based on predetermined rules comprising at least a critical stock level and a rolling forecast of required stock over a predetermined time period;

- 2a -

producing a product amount data signal, and output signals based on the predetermined rules;

enabling a supplier or customer to view the output signals over a communication link to facilitate supply or ordering of stock;

5   triggering actuation of a request for resupply of stock or stoppage instructions to stop resupply of stock in response to the product position data signal;

determining transportation costs of stock to be supplied by a potential supplier and/or ordered by a potential customer; and

10   triggering a call for supply of stock from suppliers based on the product amount data signal or fulfilling orders submitted by customers, and generating supply documentation for the supply of stock from suppliers or fulfilment of orders from customers.

15   In one embodiment the predetermined rules further comprise a minimum stock level, a current stock committed by single supplier, a multiple supplier commitment level, and wherein the critical stock level is the difference between the current stock committed by a single supplier and the multiple supplier commitment level, and wherein the multiple supplier commitment level is the sum of all the current

20   stock committed by single suppliers.

In one embodiment the output signals are in the form of an XML formatted document that is stored on a server.

25   Preferably the communication link comprises the Internet.

Preferably the communication link is a secured encrypted communications link.

In one embodiment of the invention the product amount data signal is generated

30   by the subtraction of the forecast and critical stock level data to provide both status buffer data and the stock position data.

Preferably one of the outputs supplied by the inventory server comprises an inventory status and ageing data.

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In another embodiment one of the outputs comprises a consumption status report comprised of transportation data and inventory forecast data to yield a final

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Amended Sheet

- 2d -

consumption status report.

In one embodiment of the invention the status buffer data and the critical stock
level data are compared to the forecast to produce the product amount signal in
5   the form of an order quantity to trigger activation of the request for resupply of
stock.

Preferably forecast inventory is compared with the minimum level of inventory
required, critical stock level and current stock committed by single supplier data to
10   determine the nature of the trigger activation so that a determination is made as to
whether there is excessive stock levels or shortage due to insufficient buffer stock
so that triggering actions can be transmitted by the supply module to either a third
party processing system or another system connected to the master server for
further electronic processing, including reordering and inventory stoppage
15   instructions.

In another embodiment of the invention the product amount data signal is
produced by combining the buffer stock data and minimum stock level data to
determine whether the level of forecast inventory required data is adequate and, if
20   not, the server supplies a trigger activation to order additional stock from a
predetermined group of suppliers.

In a further embodiment of the invention, an order message is created which
matches each order message to each order or part specification number from a
25   specification database and consolidates part numbers and identifying data into a
look up file.

Preferably the look up file is used to determine transportation costs from a
database relating to the transportation of stock, and a calculation processor for
30   calculating estimated shipping costs to bring all stocks to be reordered to a
particular location.

Preferably the look up file is updated to trigger shipment booking and/or stock
ordering together with transportation documentation.

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- 2e -

One embodiment of the invention consists of some basic components as follows:

1.　Inventory tracking and forecasting module
2.　Multiple location visibility of inventory upon trigger/rule activation
3.　Electronic ordering of inventory and automatic documentation processing
　　and cost of transportation/freight calculation.

Inventory tracking and forecasting module

The invention has a rule-based system whereby inventory levels are classified according to the following classes:

Minimum stock level (MSL)
Critical stock level (CSL)
Current stock committed by single supplier (CSGL)
Multiple supplier commitment level (MSCL)

In the first embodiment of the present invention, the system will accept electronic input of data relating to the mentioned forecast data (Minimum, critical stock levels & multiple supplier commitment level), and generate a result or output data based on the following manner;

$$CSGL - MSL = CSL$$

Where CSL (1) + CSL (2) + CSL (3) = MSCL

Amended Sheet

- 10 -

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1.   An inventory management system comprising:

an inventory server having a database of inventory products for classifying
5   inventory levels based on predetermined rules comprising at least a critical stock
level and a rolling forecast of required stock over a predetermined time period, to
enable a product amount data signal to be generated, and output signals
generated based on the predetermined rules, the server enabling a supplier or
customer to view the output signals over a communication link to facilitate supply
10   or ordering of stock, and to trigger actuation of a request for resupply of stock or
stoppage instructions to stop resupply of stock in response to the product position
data signal;

a transport server for containing data relating to the transportation of stock
to enable transportation costs of stock to be supplied by a potential supplier and/or
15   ordered by a potential customer to be determined so that the total supply and
transportation cost of stock can be determined; and

a supply module for activation by the server in response to the trigger
activation from the server to call for supply of stock from suppliers or fulfil orders
submitted by customers and to generate supply documentation for the supply of
20   stock from suppliers or fulfilment of orders from customers.

2.   The system of claim 1 wherein the predetermined rules further comprise a
minimum stock level, a current stock committed by single supplier, a multiple
supplier commitment level, and wherein the critical stock level is the difference .
25   between the current stock committed by a single supplier and the multiple supplier
commitment level, and wherein the multiple supplier commitment level is the sum
of all the current stock committed by single suppliers.

3.   The system of claim 1 wherein the inventory server provides the output
30   signals in the form of an XML formatted document that is stored on the server.

4.   The system of claim 1 wherein the communication link comprises the
internet.

35   5.   The system of claim 4 wherein the communication link is a secured
encrypted communications link.

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Amended Sheet

- 11 -

6.   The system of claim 1 wherein the product amount data signal is generated by the subtraction of the forecast and critical stock level data to provide both status buffer data and the stock position data.

5   7.   The system of claim 1 wherein one of the outputs supplied by the inventory server comprises an inventory status and ageing data.

8.   The system of claim 1 wherein one of the outputs comprises a consumption status report comprised of transportation data and inventory forecast
10   data to yield a final consumption status report.

9.   The system of claim 6 wherein the status buffer data and the critical stock level data are compared to the forecast to produce the product amount signal in the form of an order quantity to trigger activation of the request for resupply of
15   stock.

10.   The system of claim 6 wherein the inventory server has a master remote server, a main server memory and at least one data storage device, and wherein the master remote server loads data representing the level of forecast inventory
20   required according to stored parameters in the permanent data storage device and determines the level of forecast inventory required according to data provided by the master remote server or separate processing systems.

11.   The system of claim 10 wherein the master remote server compares the
25   level of forecast inventory with the minimum level of inventory required, critical stock level and current stock committed by single supplier data to determine the nature of the trigger activation so that a determination is made as to whether there is excessive stock levels or shortage due to insufficient buffer stock so that triggering actions can be transmitted by the supply module to either a third party
30   processing system or another system connected to the master server for further electronic processing, including reordering and inventory stoppage instructions.

12.   The system of claim 11 wherein the product amount data signal is produced by combining the buffer stock data and minimum stock level data to
35   determine whether the level of forecast inventory required data is adequate and, if not, the server supplies a trigger activation to order additional stock from a predetermined group of suppliers.

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Amended Sheet

- 12 -

13. The system of claim 1 wherein the inventory server in response to the trigger activation creates an order message for supply to the order module which causes the order module to match each order message to each order or part specification number from a specification database and consolidates part numbers and identifying data into a look up file.

14. The system of claim 13 wherein the look up file is used by the transport server to determine transportation costs from a database relating to the transportation of stock, and a calculation processor for calculating estimated shipping costs to bring all stocks to be reordered to a particular location.

15. The system of claim 14 wherein the ordering module includes a sub-module for updating the look up file to trigger shipment booking and/or stock ordering together with transportation documentation.

16. An inventory management method comprising:

maintaining a database of inventory products for classifying inventory levels based on predetermined rules comprising at least a critical stock level and a rolling forecast of required stock over a predetermined time period;

producing a product amount data signal, and output signals based on the predetermined rules;

enabling a supplier or customer to view the output signals over a communication link to facilitate supply or ordering of stock;

triggering actuation of a request for resupply of stock or stoppage instructions to stop resupply of stock in response to the product position data signal;

determining transportation costs of stock to be supplied by a potential supplier and/or ordered by a potential customer; and

triggering a call for supply of stock from suppliers based on the product amount data signal or fulfilling orders submitted by customers, and generating supply documentation for the supply of stock from suppliers or fulfilment of orders from customers.

17. The method of claim 16 wherein the predetermined rules further comprise a minimum stock level, a current stock committed by single supplier, a multiple supplier commitment level, and wherein the critical stock level is the difference

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Amended Sheet
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- 13 -

between the current stock committed by a single supplier and the multiple supplier commitment level, and wherein the multiple supplier commitment level is the sum of all the current stock committed by single suppliers.

18. The method of claim 16 wherein the output signals are in the form of an XML formatted document that is stored on a server.

19. The method of claim 16 wherein the communication link comprises the internet.

20. The method of claim 19 wherein the communication link is a secured encrypted communications link.

21. The method of claim 16 wherein the product amount data signal is generated by the subtraction of the forecast and critical stock level data to provide both status buffer data and the stock position data.

22. The method of claim 16 wherein one of the outputs supplied by the inventory server comprises an inventory status and ageing data.

23. The method of claim 16 wherein one of the outputs comprises a consumption status report comprised of transportation data and inventory forecast data to yield a final consumption status report.

24. The method of claim 21 wherein the status buffer data and the critical stock level data are compared to the forecast to produce the product amount signal in the form of an order quantity to trigger activation of the request for resupply of stock.

25. The method of claim 16 wherein forecast inventory is compared with the minimum level of inventory required, critical stock level and current stock committed by single supplier data to determine the nature of the trigger activation so that a determination is made as to whether there is excessive stock levels or shortage due to insufficient buffer stock so that triggering actions can be transmitted by the supply module to either a third party processing system or another system connected to the master server for further electronic processing, including reordering and inventory stoppage instructions.

Amended Sheet

- 14 -

26.   The method of claim 21 wherein the product amount data signal is
produced by combining the buffer stock data and minimum stock level data to
determine whether the level of forecast inventory required data is adequate and, if.
5   not, the server supplies a trigger activation to order additional stock from a
predetermined group of suppliers.

27.   The method of claim 16 wherein an order message is created which
matches each order message to each order or part specification number from a
10   specification database and consolidates part numbers and identifying data into a
look up file.

28.   The method of claim 27 wherein the look up file is used to determine
transportation costs from a database relating to the transportation of stock, and a
15   calculation processor for calculating estimated shipping costs to bring all stocks to
be reordered to a particular location.

29.   The method of claim 28 wherein the look up file is updated to trigger
shipment booking and/or stock ordering together with transportation
20   documentation.